IRON AGE

FEBRUARY 1987

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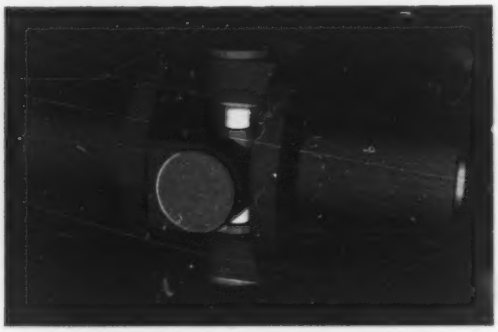
MANUFACTURING MANAGEMENT

Automakers & Steelmakers Team Up to Improve Quality

Why Micro Cad is Sweeping the Country



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IRON AGE
MANUFACTURING MANAGEMENT

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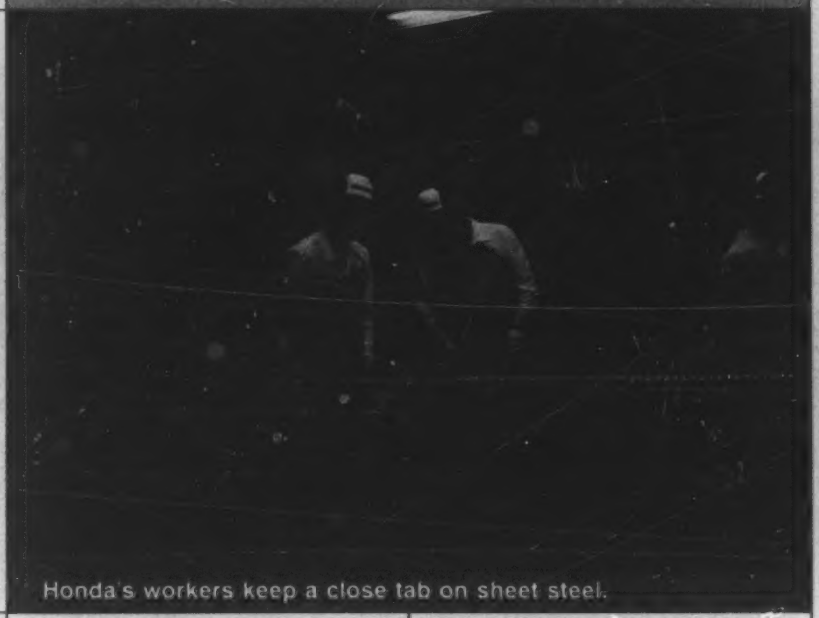

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U.S. BATTLES THE WORLD WITH MORE EXPORTS AND OFFSHORE MANUFACTURING

American exporters have learned that they must be able to export whether the dollar is weak or strong. The weak dollar is helping them now, but success in exporting depends on more fundamental factors.

BY BRYAN BERRY

The strong dollar has been a primary cause of the U.S. trade deficit that's spiralled higher and higher over the past five years. Now the dollar has fallen 40 pct against the Japanese yen and Deutschemark since its peak in February 1985.

"We can't alibi that the yen is the problem now," said Chrysler Chairman Lee Iacocca at a recent press conference. "We can't be crybabies any more."

Ironically, the initial impact of the weaker dollar was to raise the dollar value of our trade deficit. That's because the imports from Japan and Germany now have a higher dollar value. Manufacturers in those countries, however, don't plan to lose their U.S. market share by raising their prices as much as their currencies have risen. The result: thinner profit margins and even operating losses for some Japanese and German companies.

The total U.S. trade deficit of $149 billion in 1985 grew to about $170 billion in 1986, including a $137 billion deficit in manufactured goods. But the trade deficit peaked in 1986, say senior Dept. of Commerce (DOC) economists. They predict it will fall to $140-150 billion this year.

U.S. exports to both Japan and the European Economic Community (EEC) declined from 1984 to 1985. But last year they rose sharply. U.S. exports to Japan increased 19 pct from the first nine months of 1985 to the same period in 1986, from $17 billion to $20 billion. Exports to the EEC rose from $37 billion to $39 billion.

It takes 24 months for a change in the exchange rate to make its full impact on the trade deficit, estimate DOC economists. The two-year period ends this month—which means that U.S. business will get all the benefits of the weak dollar this year.

However, the exchange rate will help our trade only with Japan and Europe. The dollar has remained about the same against the currencies of Canada, Australia, Latin America and such newly industrialized countries in Asia as Korea and Taiwan.

Other problems not helped by our weak dollar are the poor economies and huge debts of many Latin American nations.

Also, the Japanese and European economies have been growing, but not fast enough to greatly increase their imports.

Still, U.S. industry exported $213 billion in 1985, including $47 billion to Canada, $46 billion to the EEC, and $23 billion to Japan. Those figures will grow this year, and the weak dollar is just one reason why.

The first lesson successful American exporters have learned is that they must be able to export whether the dollar is weak or strong. The weak dollar is helping them now, but their success in exporting depends on more fundamental factors: How unique is their product, how efficient is their manufacturing, how good is their quality?

Such factors explain why Japanese manufacturers have been able to continue increasing their exports whether the yen is strong or weak. Some Japanese automakers even have plans to streamline operations so that they can make a profit when the yen is even stronger than now.

Unfortunately, many American businessmen believe that low cost is the major strength of Japanese companies. This is a myth, charged Michael E. Porter, a professor at Harvard Business School, in a speech last year.

"We must innovate in areas that our competitors can't easily imitate," said Mr. Porter. "We can develop advantages based on technology, on distribution, on how we relate to the customer, and on how we differentiate our products."

Too many American companies

Our Top Trading Partners In Manufactured Goods (1985)

(In Billions of Dollars)

Country	Exports	Imports	Surplus or Deficit
Canada	42.4	50.6	-8.2
Japan	12.4	71.6	-59.2
Mexico	10.8	9.1	+1.7
United Kingdom	10.1	11.2	-1.1
W. Germany	7.5	20.3	-12.8
France	5.2	8.6	-3.4
Australia	5.1	0.8	+4.3
The Netherlands	4.3	2.9	+1.4
Saudi Arabia	3.9	0.2	+3.7
South Korea	3.6	10.5	-6.9
Italy	3.0	8.9	-5.9
Singapore	3.0	3.8	-0.8
Taiwan	2.9	17.3	-14.4
Brazil	2.2	4.7	-2.5
Hong Kong	2.1	8.9	-6.8

Source: U.S. Dept. of Commerce

with plants and salespeople around the globe are not coordinating them globally, said Mr. Porter. In many cases, U.S. companies are positioned internationally even better than the Japanese. Companies like General Motors, Ford, Timken, and Federal-Mogul have had European facilities for several decades. Some have had plants in Korea, Taiwan, Australia, and other Pacific countries since after World War II. The people in some countries, like Korea, prefer to do business with Americans, not Japanese.

But American companies have tended to squander such advantages. They've taken a "multidomestic approach to international strategy," said Mr. Porter, and developed companies with a "local face," said University of Michigan business professor C.K. Prahalad.

U.S. Trade In Manufactured Goods, 1980 - 1985

(In Billions of Dollars)

Year	Exports	Imports	Surplus or Deficit
1980	156	139	+17
1981	167	156	+11
1982	151	158	-7
1983	143	178	-35
1984	158	242	-84
1985	162	269	-107

Source: U.S. Dept. of Commerce

In an extreme example, General Motors in Detroit had almost no links with its British and German subsidiaries, Vauxhall and Opel, in the late 1970s. In contrast, Honda and Nissan's Japanese headquarters help fine-tune production at their U.S. plants to meet world market demand.

Battling Foreign Competition

Mr. Prahalad vigorously preaches the importance of U.S. firms challenging foreign competitors in their own home markets. "Take on the Japanese where they're most vulnerable—in Japan," he advises. "When the Japanese come to the U.S. to compete, they expose maybe 15 pct of their capital flow to U.S. competition. Perhaps 90 pct of the U.S. firm's capital flow is exposed to the Japanese competition, so it's in much greater danger."

When Michelin invaded the U.S. tire market, Goodyear struck back at Michelin's European base—blunting the French company's attempt to grab U.S. market share.

Too often U.S firms have jumped into foreign markets through joint ventures with foreign firms. American firms gave Japanese companies their technology in exchange for access to the Japanese market. The result, points out University of Michigan business professor Vladimir Pucik: "The Japanese competitors got the American technology and kept their home market." Later they used this technology to invade the U.S. market.

"Joint ventures are a symptom of the problem, not a solution," said Mr. Pucik. American companies' first priority should be beating the Japanese and European competition, preferably in their own home markets.

The same is true when Japanese companies seek joint ventures with U.S. companies in the U.S. "If access to the U.S. market is our strength, we shouldn't give that up easily to the Japanese," said the professor.

Joint ventures that make sense,

said Mr. Pucik, are ones in which neither partner is dominant and both companies win something. Equity relationships sometimes are advisable, too.

"We certainly want to keep our highly proprietary technologies to ourself," said Robert R. Kurth, Borg-Warner Automotive (BWA) Inc.'s director of strategic marketing.

BWA has set up wholly owned subsidiaries in Great Britain, West Germany, Japan, and Canada to manufacture proprietary transmission components. BWA also has joint ventures in Mexico, Colombia, Venezuela, and Japan.

Thirty-six pct of BWA's $1.1 billion in worldwide sales are to foreign automakers. The company exports manual transmissions, emission-control devices, and transmission components from its U.S. plants. Some of these come back to the U.S. in imported cars.

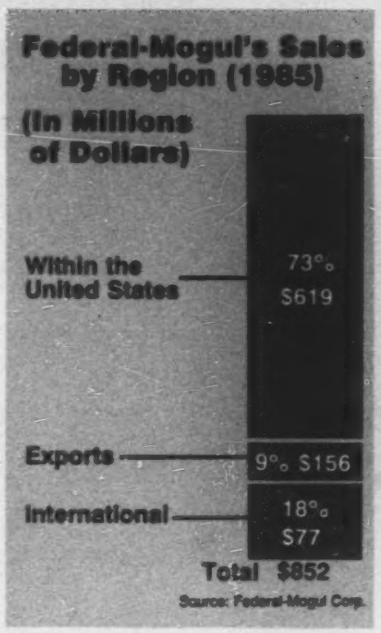
Exports by Small Companies

It's not just the billion-dollar firms that are exporting from their U.S. plants. University of Michigan professor William G. Moller, Jr. recently identified 165 exporting companies within a single county, Washtenaw, which includes Ann Arbor, Mich. Most of these firms have $10-15 million in annual sales. Exports account for 5 pct or less of sales of half the companies.

Significantly, none of the Washtenaw County companies that were exporting in 1980 had stopped doing so by 1985—despite the big jump in the dollar's exchange rate. Of the 165 firms, 23 pct make machinery other than electrical; 21 pct, measuring, analyzing, and controlling instruments; 17 pct, business services; and 10 pct, electrical and electronic machinery.

Many of the smaller and medium-size exporters in southeastern Michigan ship to U.S.-owned auto, tractor, or supplier plants in Canada, Mexico, and Europe.

Manchester Stamping Corp. (Manchester, Mich.), for example, tools up for GM, Ford, and Chrysler's U.S. plants and ships the same-type metal stampings and assemblies to the Big 3's Canadian plants. Exports make up 5 pct of its annual $11 million in sales. So far all the exports are due to U.S.-issued orders.



Now company president Wayne T. Hamilton wants to sell his stampings directly to foreign buyers. "The future lies in being able to export to countries like Japan, Mexico, Korea, and others in Europe and on the Pacific Rim," Mr. Hamilton told *Iron Age*.

Sixty companies in Washtenaw County that are not exporting now told Prof. Moller that they expect to or want to begin exporting this year.

Pricing and Exchange Rates

In the steel-supplier industry, a medium-size exporter is Consolidated Ceramic Products (CCP) and its subsidiary, Comat (Blanchester, Ohio). Comat exports tundish boards and impact pads to the major Canadian steelmakers.

CCP exports thermocouple protection tubes and fluxing pipes (through which gas is injected into molten aluminum in reverb furnaces) to Canada, Western Europe, Israel, Egypt, Australia, and Thailand. The two companies' exports add up to less than $5 million, 10 pct of their sales.

Comat has another foreign connection: Its tundish boards use technology licensed from Germany's Heinrich Odermath GMBH. Odermath has licensed Comat to sell the boards only in the U.S. and Canada. Comat's impact boards use Comat's own technology, so Comat can sell them outside North America.

R. Bruce Mickey, president of CCP and Comat, attributes the companies' success in exporting to the uniqueness of their products. "If we had a me-too product, we simply couldn't sell it around the world," said Mr. Mickey.

Since the art of steelmaking varies from country to country, Comat designs its tundish boards differently for different countries. As long as the boards' price is in the same ballpark as its competitors, pricing is not a major issue, said Mr. Mickey.

"The commodity-type products are more affected by the exchange rate than the kind of specialized, proprietary products we sell," said Richard M. Szary, group vice president and group executive for Federal-Mogul's general products group.

Federal-Mogul (F-M) exports to Japan several million dollars' worth of fasteners for the aircraft and industrial markets plus (from its English plant) air spindles for computer and circuit-board makers. So far the stronger yen has not enabled the Detroit-based F-M to raise its exports to Japan.

On the other hand, the weaker dollar has helped F-M increase its exports of bearings, seals, and valves to the European aftermarket. Mr. Szary estimates that the exchange rate affects the volume of such exports by 5-10 pct.

Manufacturing Abroad

Federal-Mogul acquired, rather than built, most of its manufacturing facilities in France, Spain, Italy, West Germany, and Great Britain. (Cont. on p. 23.)

Twenty seven pct of the company's $852 million in sales in 1985 were to foreign countries: $156 million from F-M's overseas plants and $77 million by export from the U.S.

"We do most of our manufacturing for the European original equipment market in Europe," explained Mr. Szary. "We export from our U.S. plants more for the aftermarket, since that can be served equally well by U.S. exports or European manufacturing."

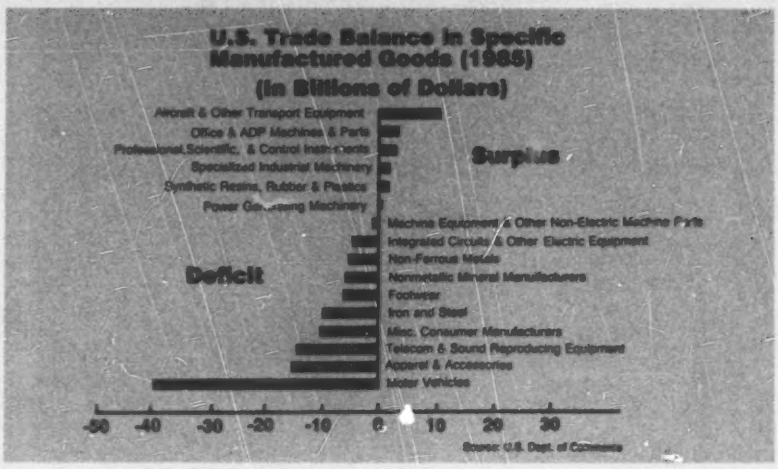
The aftermarket worldwide accounted for 46 pct of F-M's sales but 53 pct of its $131 million profit in 1985.

Timken sells bearings to 90 industries in 150 countries. It's sold to such Pacific Rim nations as South Korea and Taiwan since the end of World War II and today exports between $25 million and $50 million from the U.S. to nations in that region.

"Bearings are important to the growing economies of developing nations, so they are a good market," said John F. Hill, director of bearing marketing in North and South America for the Canton, Ohio-based Timken. Taiwan has no local bearing maker, so Timken has a significant market share there. Korea is a strong market, too.

Timken has been manufacturing bearings in England for more than 50 years and now has nearly half the tapered-bearing market there. The company also has plants in France, Canada, Brazil, Australia, and South Africa. It exports less than 20 pct of its U.S. production, shipping products that are not economical to make abroad.

"We usually must make 100,000 pieces per year of each part for economies of scale," explained Mr. Hill. "Generally 80 pct of our business comes from 20 pct of the parts numbers." Timken's Australian plant makes the 10-20 pct of the parts that comprise 80 pct of the business volume. The other parts are imported.


U.S. Trade Balance in Specific Manufactured Goods (1985)
(In Billions of Dollars)
Aircraft & Other Transport Equipment
Office & ADP Machines & Parts
Professional,Scientific, & Control Instruments
Specialized Industrial Machinery
Synthetic Resins, Rubber & Plastics
Power Generating Machinery
Surplus
Machine Equipment & Other Non-Electric Machine Parts
Integrated Circuits & Other Electric Equipment
Non-Ferrous Metals
Nonmetallic Mineral Manufactures
Deficit
Footwear
Iron and Steel
Misc. Consumer Manufactures
Telecom & Sound Reproducing Equipment
Apparel & Accessories
Motor Vehicles
-50 -40 -30 -20 -10 0 10 20 30
Source: U.S. Dept. of Commerce

Proprietary Technology

American companies with distinctive technology have scored major successes abroad. The diaphragm carburetors of Walbro Corp. (Cass City, Mich.) are compact units that work in any position. Walbro is manufacturing these products for chain saws and string trimmers in its plants in Japan, Singapore, and Mexico. The company has become the world's largest maker of such small-engine carburetors, supplying 90 pct of the Japanese market and 70 pct of the world market.

Likewise, Walbro makes a distinctive rotary electric fuel pump for automotive fuel-injection systems, supplying both the original equipment and aftermarkets. As automakers around the world use more fuel-injection systems, Walbro's sales of these pumps keep growing.

Last year Walbro formed a joint venture with Champion Spark Plug Co. (Toledo, Ohio) to sell automotive fuel systems in Europe. Champion already sells spark plugs to numerous foreign and domestic vehicle and small equipment makers.

Other success stories abroad include Garrett Corp. (Los Angeles), a leading supplier of turbochargers to automakers in Japan, Europe, and Latin America; and Loctite Corp. (Newington, Conn.), which has the dominant share of the market for industrial and consumer adhesives in Japan. Eaton, which exports about $25 million in truck components from the U.S., has 90 pct of the market for class 8 truck transmissions in Australia.

Korea, China, Taiwan, Singapore, Canada, and Brazil offer perhaps the most attractive prospects for American firms considering exporting or manufacturing abroad. Korean firms are actively seeking U.S. partners and U.S. products in such fields as factory automation. Korean automaker Hyundai has bought Goodyear tires and Libbey-Owens-Ford glass and wants more U.S. parts.

The U.S. continues to do more trade with Canada than with any other nation. In 1985 the U.S. exported $42 billion and imported $51 billion of manufactured goods from Canada.

U.S. companies can receive aid in exporting from the U.S. Dept. of Commerce's International Trade Administration. Exporters to Japan can consider trading firms such as Mitsui & Co., U.S.A. (New York City), which handles $3.5 billion of U.S. exports to Japan each year. The Japan External Trade Organization (Chicago) helps set up ventures between U.S. and Japanese firms.

As U.S. companies step up their exports, they'll have to become more knowledgeable about foreign products and business practices. The alternative is to sit and wait for foreign manufacturers to take over the U.S market. □

PRICE & PRODUCTION DATA

(Effective January 5, 1987)

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
Northeast Coast	131	107	130	157
Pittsburgh	180	148	162	194
Youngstown	105	90	114	85
Lake Erie	105	112	103	113
Detroit	150	143	146	120
Chicago	335	308	338	467
Midwest	159	154	180	156
Southern	144	129	144	196
Western	40	36	42	75
U.S. Production	1,349	1,227	1,359	1,563

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports unless otherwise stated. Rail transportation, handling and unloading may be charged to buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 58.0*
Pellets (per iron unit natural)	gross-ton 59.4**
Pellets (per iron unit natural)	gross-ton 72.5-86.9***
Mesabi, regular-unscreened	gross-ton 32.53
Mesabi, non-bessemer	gross-ton 30.03-31.53

*58.0¢—Mineral Services, Inc. as of 8/13/85. **59.4¢—Inland Steel Mining, 1/1/85 and Pickands Mather, 8/1/85, delivered hold of vessel, upper Lake ports. ***72.5¢—U.S. Steel as of 8/16/85. 86.9¢—Oglebay Norton 3/25/82; Hanna Mining and Cleveland-Cliffs, 2/26/82.

STEEL PRODUCTION, COMPOSITE PRICES

(Effective January 5, 1987)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1986	To Date 1985
Net tons, in thousands	1,349	1,227	—	—
Capability Utilization Rate	55.8	50.7	—	—

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 1/4/87)	25.236	24.951	24.951	24.607
Pig Iron** (Net ton= 2000 lbs.)	$213.00	$213.00	$213.00	$213.00
Scrap No. 1 hvy.*** (Gross ton=2240 lbs.)	$ 76.50	$ 74.50	$ 74.17	$ 73.17
No. 2 bundles	$ 52.17	$ 50.50	$ 50.50	$ 52.83

Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$ 79.50	$ 79.50	$ 78.50	$ 73.50
No. 1 steel, Philadelphia	71.50	71.50	71.50	71.50
No. 1 steel, Chicago	78.50	72.50	72.50	74.50
No. 1 bundles, Detroit	80.50	75.50	75.50	70.50
Low Phos., Youngstown	79.50	79.50	75.50	73.50
No. 1 mach'y cast., Pgh	74.50	74.50	74.50	68.50
No. 1 mach'y cast., Phila	93.50	93.50	93.50	91.50
No. 1 mach'y cast., Chi.	101.50	101.50	101.50	104.50

*Finished Steel Composite: Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.
**Pig Iron Composite: Based on average prices for basic and foundry pig iron at representative producing points within the U.S.
***Steel Scrap Composite: Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

NONFERROUS PRICES

(Effective January 5, 1987) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum (LME)	51.00	51.70	1/5/87
Copper (C)	64.00	63.50	1/5/87
Lead	28.00	27.50	12/19/86
Magnesium Ingot	153.00	148.00	12/9/85
Nickel (LME)	162.00	160.00	1/5/87
Zinc	47.00	44.50	10/6/86

ALUMINUM: Avg. for last week & previous week. COPPER (C)=cathode. LEAD: common grade. MAGNESIUM: 99.8% pig, delivered. NICKEL: Avg. for last week & previous week. ZINC: high grade.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$248.00
Beryllium-copper, per lb. cont. Be	$152.00
Beryllium 97% powder 200	$196.00
Cadmium, ton lots	$1.50
Calcium, ton lots, crown	$3.92
Chromium, 99.5% electro	$4.62
Cobalt, 99%, cathode	$12.50
Gold, per troy oz.	$403.50
Indium, per troy oz.	$2.87
Iridium, per troy oz.	$410.00
Magnesium sticks, 10,000 lbs.	$2.02
Mercury, per 76-lb., f.o.b. N.Y.	$210.00-220.00
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$3.45
Palladium, per troy oz.	$117.00
Platinum, per troy oz.	$484.00
Rhodium, per troy oz.	$1,100.00
Silver ingots, per troy oz.	$5.43
Titanium sponge, melt grade	$3.40-3.55
Tungsten powder, hyd red.	$9.53-9.85
Vanadium	$6.00
Zirconium sponge	$11.00-17.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb. EX-SMELTER, based on daily market in Kuala Lumpur in Malaysian dollars per kilo.)

December 29—288.00 January 1—Holiday
December 30—289.50 January 2—Holiday
December 31—290.00

Scrap Prices
Brass Mill Scrap

(Cents per lb.; over 20,000 lbs. add 1¢ per lb.)

	Solids	Turnings
Copper	56	51
Yellow brass	49	48½
Red brass	50	46
Comm. bronze	51½	46½
Mang. bronze	39½	38½
Free cutting rod ends	48	47

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	55
No. 2 copper wire	47
Light copper	41

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	49
No. 2 copper wire	40
Light copper	33
No. 1 composition	42
No. 1 comp. turnings	42
Hvy. yellow brass solids	29
Hvy. yellow brass turnings	24
Radiators	27

Aluminum

New mixed clips	31	— 32
Old sheet	28	— 29
Old cast	28	— 29
Clean dry borings	29	— 30

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound

Aluminum

Segregated clippings	26	— 27
Mixed I.C. clips	24	— 25
Old sheets and cast	21	— 22
Borings and turnings	17	— 18
Duraluminum clippings	22	— 23

Copper and Brass

No. 1 copper wire	44	— 47
No. 2 copper wire	35	— 36
Light copper	32	— 33
Radiators	22	— 23
No. 1 composition	36	— 37
No. 1 composition turnings	34	— 35
Cocks and faucets	30	— 31
Clean heavy yellow brass	26	— 28
Brass pipe	26	— 27
New soft brass clippings	39	— 40

Lead

Heavy soft lead	9	— 10
Whole batteries	1	— 2
Type metal	17	— 18
Electrotype	14	— 15

Nickel

Nickel solids	100	—110
Nickel rod ends	100	—110
Nickel sheets, clips	100	—110
Nickel turnings	25	— 35

Zinc

New zinc clippings	15	— 16
Old diecast zinc	11	— 12

EFFECTIVE JANUARY 5, 1987

(Effective January 5, 1987) Prices obtained or trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of Iron Age editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$ 79.00 to	$ 80.00
No. 2 hvy. melting	69.00 to	70.00
No. 1 dealer bundles	99.00 to	100.00
No. 1 factory bundles (auto)	100.00 to	101.00
No. 2 bundles	45.00 to	46.00
No. 1 busheling	98.00 to	99.00
Machine shop turnings	8.00 to	9.00
Shoveling turnings	45.00 to	46.00
Cast iron borings	44.00 to	45.00
Low phos. punchings plate	106.00 to	107.00
Heavy turnings	68.00 to	69.00
No. 1 RR hvy. melting	88.00 to	89.00
Rails, 2 ft. and under	97.00 to	98.00
Scrap rails, random lgth.	85.00 to	86.00
RR specialties	98.00 to	99.00
No. 1 machinery cast	74.00 to	75.00
Cupola cast	67.00 to	68.00
Heavy breakable cast	30.00 to	31.00
Stainless		
18-8 bundles and solids	485.00 to	495.00
18-8 turnings	385.00 to	395.00

Chicago

No. 1 hvy. melting	$ 78.00 to	$ 79.00
No. 2 hvy. melting	74.00 to	75.00
No. 1 dealer bundles	94.00 to	95.00
No. 1 factory bundles (auto)	97.00 to	98.00
No. 2 dealer bundles	62.00 to	63.00
No. 1 busheling	89.00 to	90.00
Shredder scrap	83.00 to	84.00
Machine shop turnings	22.00 to	23.00
Mixed borings and turnings	14.00 to	15.00
Shoveling turnings	23.00 to	24.00
Cast iron borings	39.00 to	40.00
Low phos. forge crop	94.00 to	95.00
Low phos. punchings plate 1/4 in. and heavier	113.00 to	114.00
Low phos. 2 ft. and under	107.00 to	108.00
No. 1 RR hvy. melting	82.00 to	83.00
Scrap rails random lgth	79.00 to	80.00
Reroller rails	100.00 to	101.00
Rails, 2 ft. and under	94.00 to	95.00
RR couplers and knuckles	79.00 to	80.00
RR car axles	104.00 to	105.00
No. 1 machinery cast	101.00 to	102.00
Cupola cast	89.00 to	90.00
Stove plate	99.00 to	100.00
Steel car wheels	85.00 to	86.00
Stainless		
18-8 bundles and solids	460.00 to	470.00
18-8 turnings	360.00 to	370.00
430 bundles and solids	125.00 to	135.00
430 turnings	85.00 to	95.00

Philadelphia

No. 1 hvy. melting	$ 70.00 to	$ 73.00
No. 2 hvy. melting	62.00 to	65.00
No. 1 dealer bundles	86.00 to	89.00
No. 2 dealer bundles	47.00 to	50.00
No. 1 busheling	85.00 to	88.00
Shredder scrap	84.00 to	87.00
Machine shop turnings	24.00 to	27.00
Mixed borings and turnings	24.00 to	27.00
Shoveling turnings	39.00 to	42.00
Low phos. 5 ft. and under	79.00 to	82.00
Low phos. 2 ft. punchings	91.00 to	94.00
Electric furnace bundles	96.00 to	99.00
RR specialties	81.00 to	84.00
Rails, 2 ft. and under	96.00 to	99.00
Cupola cast	81.00 to	84.00
Heavy breakable cast	52.00 to	55.00
No. 1 machinery cast	92.00 to	95.00

Detroit

Brokers buying prices per gross ton on cars.

No. 1 hvy. melting	$ 53.00 to	$ 54.00
No. 2 hvy. melting	52.00 to	53.00
No. 1 dealer bundles	80.00 to	81.00
No. 2 bundles	39.00 to	40.00
No. 1 busheling	78.00 to	79.00
Drop forge flashings	44.00 to	45.00
Machine shop turnings	24.00 to	25.00
Mixed borings and turnings	6.00 to	7.00
Shoveling turnings	24.00 to	25.00
Cast iron borings	21.00 to	22.00
Heavy breakable cast	32.00 to	33.00
Mixed cupola cast	47.00 to	48.00
Automobile cast	71.00 to	72.00
Stainless		
18-8 bundles and solids	430.00 to	440.00
18-8 turnings	290.00 to	300.00
430 bundles and solids	115.00 to	125.00

Youngstown

Brokers buying prices per gross ton on cars.

No. 1 hvy. melting	$ 63.00 to	$ 64.00
No. 2 hvy. melting	61.00 to	62.00
No. 1 dealer bundles	83.00 to	84.00
No. 2 dealer bundles	43.00 to	44.00
Machine shop turnings	17.00 to	18.00
Shoveling turnings	17.00 to	18.00
Low phos. plate	79.00 to	80.00
Electric furnace bundles	68.00 to	69.00
Galvanized bundles	65.00 to	66.00

Cleveland

Brokers buying prices per gross ton on cars.

No. 1 hvy. melting	$ 59.00 to	$ 60.00
No. 2 hvy. melting	56.00 to	57.00
No. 1 dealer bundles	86.00 to	87.00
No. 1 factory bundles	87.00 to	88.00
No. 2 bundles	32.00 to	33.00
No. 1 busheling	75.00 to	76.00
Machine shop turnings	17.00 to	18.00
Shoveling turnings	17.00 to	18.00
Cast iron borings	20.00 to	21.00
Cut structural & plates, 5 ft. and under	75.00 to	76.00
Cut structural & plates, 2 ft. and under	96.00 to	97.00
Low phos. punchings plate	96.00 to	97.00
Foundry steel, 2 ft. & under	58.00 to	59.00
No. 1 RR hvy. melting	66.00 to	67.00
Rails, 2 ft. and under	95.00 to	96.00
Rails, 18 in. and under	97.00 to	98.00
No. 1 machinery cast	85.00 to	86.00
Mixed cast	52.00 to	53.00
Stainless		
18-8 bundles	435.00 to	445.00
18-8 turnings	295.00 to	305.00
430 bundles	120.00 to	130.00

Buffalo

Brokers buying prices per gross ton on cars.

No. 1 hvy. melting	$ 55.00 to	$ 56.00
No. 2 hvy. melting	45.00 to	46.00
No. 1 busheling	75.00 to	76.00
No. 1 dealer bundles	75.00 to	76.00
No. 2 bundles	32.00 to	33.00
Machine shop turnings	13.00 to	14.00
Mixed borings and turnings	13.00 to	14.00
Shoveling turnings	19.00 to	20.00
Cast iron borings	27.00 to	28.00
Low phos. plate	78.00 to	79.00
Structural and plate, 2 ft. and under	80.00 to	81.00
Rails, 2 ft. and under	79.00 to	80.00
Scrap rails, random lgth.	61.00 to	62.00
No. 1 machinery cast	75.00 to	76.00
No. 1 cupola cast	71.00 to	72.00

St. Louis

No. 1 hvy. melting	$ 72.00 to	$ 73.00
No. 2 hvy. melting	61.00 to	62.00
No. 1 busheling	86.00 to	87.00
No. 1 dealer bundles	86.00 to	87.00
No. 2 bundles	57.00 to	58.00
Machine shop turnings	15.00 to	16.00
Shoveling turnings	19.00 to	20.00
Cast iron borings	26.00 to	27.00
No. 1 RR hvy. melting	79.00 to	80.00
Rails, random length	76.00 to	77.00
Rails, 5 ft. and under	91.00 to	92.00
RR specialties	79.00 to	80.00
Cupola cast	66.00 to	67.00
Heavy breakable cast	40.00 to	41.00
Stove plate	85.00 to	86.00
Steel car wheels	85.00 to	86.00
Rerolling rails	99.00 to	100.00
Unstripped motor blocks	49.00 to	50.00

Birmingham

No. 1 hvy. melting	$ 73.00 to	$ 74.00
No. 2 hvy. melting	69.00 to	70.00
No. 1 dealer bundles	73.00 to	74.00
No. 2 bundles	49.00 to	50.00
No. 1 busheling	73.00 to	74.00
Shredder scrap	95.00 to	96.00
Machine shop turnings	25.00 to	26.00
Shoveling turnings	36.00 to	37.00
Cast iron borings	36.00 to	37.00
Electric furnace bundles	69.00 to	70.00
Elec. furnace, 3 ft. & under	75.00 to	76.00
Structural and plate, 2 ft.	92.00 to	93.00
Structural and plate, 4 ft.	83.00 to	84.00
No. 1 RR hvy. melting	83.00 to	84.00
Scrap rails, random lgth.	73.00 to	74.00
Rails, 2 ft. and under	93.00 to	95.00
Angles and splice bars	83.00 to	84.00
No. 1 cupola cast	82.00 to	83.00
Unstripped motor blocks	74.00 to	75.00

Cincinnati

Brokers buying prices per gross ton on cars.

No. 1 hvy. melting	$ 58.00 to	$ 59.00
No. 2 hvy. melting	53.00 to	54.00
No. 1 dealer bundles	80.00 to	81.00
No. 2 bundles	32.00 to	33.00
Machine shop turnings	11.00 to	12.00
Shoveling turnings	14.00 to	15.00
Cast iron borings	24.00 to	25.00
Low phos. 18 in. and under	83.00 to	84.00
Rails, random length	63.00 to	64.00
Rails, 2 ft. and under	85.00 to	86.00
No. 1 cupola cast	69.00 to	70.00
Heavy breakable cast	29.00 to	30.00
Drop broken cast	74.00 to	75.00

New York

Brokers buying prices per gross ton on cars.

No. 1 hvy. melting	$ 38.00 to	$ 40.00
No. 2 hvy. melting	31.00 to	32.00
No. 2 dealer bundles	20.00 to	22.00
Mixed borings and turnings	10.00 to	11.00
Machine shop turnings	4.00 to	6.00
Shoveling turnings	10.00 to	12.00
Clean cast, chem. borings	35.00 to	36.00
No. 1 machinery cast	79.00 to	80.00
Mixed yard cast	50.00 to	51.00
Heavy breakable cast	10.00 to	12.00
Stainless		
18-8 prepared solids	370.00 to	390.00
18-8 turnings	270.00 to	310.00
430 prepared solids	90.00 to	100.00
430 solids	75.00 to	85.00

Boston

Brokers buying prices per gross ton on cars.

No. 1 hvy. melting	$ 49.00 to	$ 51.00
No. 2 hvy. melting	39.00 to	41.00
No. 1 dealer bundles	53.00 to	55.00
No. 2 bundles	32.00 to	34.00
No. 1 busheling	56.00 to	58.00
Shredder scrap	59.00 to	61.00
Machine shop turnings	12.00 to	14.00
Shoveling turnings	18.00 to	20.00
No. 1 machinery cast	72.00 to	77.00
Mixed cupola cast	44.00 to	46.00
Heavy breakable cast	8.00 to	10.00

San Francisco

No. 1 hvy. melting	$ 40.00 to	$ 42.00
No. 2 hvy. melting	34.00 to	36.00
No. 1 dealer bundles	31.00 to	33.00
No. 2 dealer bundles	20.00 to	21.00
Machine shop turnings	8.00 to	9.00
Cast iron borings	8.00 to	9.00
No. 1 cupola cast	80.00 to	82.00

Los Angeles

No. 1 hvy. melting	$ 34.00 to	$ 36.00
No. 2 hvy. melting	28.00 to	30.00
No. 1 dealer bundles	26.00 to	28.00
No. 2 dealer bundles	16.00 to	18.00
Machine shop turnings	9.00 to	10.00
Shoveling turnings	10.00 to	11.00
Cast iron borings	8.00 to	9.00
Elec. furnace, 1 ft. and under (foundry)	67.00 to	69.00
No. 1 cupola cast	72.00 to	74.00

Seattle

No. 1 hvy. melting	$ 60.00 to	$ 62.00
No. 2 hvy. melting	51.00 to	53.00
No. 2 bundles	35.00 to	37.00
No. 1 cupola cast	89.00 to	90.00
Mixed yard cast	80.00 to	82.00

Hamilton, Ont.

Brokers buying prices per gross ton on cars.

No. 1 hvy. melting	$ 74.00
No. 2 hvy. melting, cut 2 ft. and under	66.00
No. 1 dealer bundles	82.00
No. 2 bundles	58.00
Mixed steel scrap	53.00
Bush. new fact. prep'd	77.00
Bush. new fact. unprep'd	60.00
Machine shop turnings	30.00
Short steel turnings	30.00
Mixed borings and turnings	19.00
Cast scrap	97.00

Houston

Brokers buying prices per gross ton on cars.

No. 1 hvy. melting	$ 64.00 to	$ 65.00
No. 2 hvy. melting	54.00 to	55.00
No. 2 bundles	33.00 to	34.00
Machine shop turnings	13.00 to	14.00
Crushed turnings	23.00 to	24.00
Shredder scrap	75.00 to	76.00
Cut structural plate, 2 ft. and under	89.00 to	90.00
Cut structural plate, 5 ft. and under	74.00 to	75.00
Unstripped motor blocks	52.00 to	53.00
Cupola cast	83.00 to	84.00

1986 WAS A YEAR OF PRICE DEFLATION

Prices of producers' finished goods were unchanged in December from the month before.

That's the way it has been for a long time now; prices remaining stagnant, or actually falling.

The 'no change' price situation in December followed four months of modest increases. And, for the full year 1986, finished goods prices moved down 2.5 pct.

Too, the price decline last year followed increases of less than 2 pct in each of the three preceding years.

Importantly, tags on capital equipment were right in line with the overall pattern in December; they were unchanged from November. This is clearly shown on the table here.

Why such a soft price year?

Janet Norwood, commissioner of the Bureau of Labor Statistics, cited "dramatic cuts in prices for energy goods" as the "driving force" behind price softness last year.

She noted recent firming in prices for energy goods but added, "I doubt that this development threatens to reaccelerate inflation to double-digit levels in the immediate future."

The commissioner further noted that even with energy goods prices excluded, there existed a "continuing very moderate underlying rate of inflation" last year. Prices for finished goods outside the volatile food and energy sectors rose by less than 3 pct for the fourth consecutive year.

Commissioner Norwood also pointed to the other side of the coin on lower prices.

"Falling prices have constituted a major problem," she explained, "while profit margins for some manufacturing concerns are being seriously restrained by intense foreign competition."

Latest Month Covered: December 1986

Products	Index Reading For Month (1967 = 100)	Pct Change From Previous Month	Pct Change From Year-Ago Month
Metal Cutting Machine Tools	408.2	+ 0.1	+ 3.2
Metal Forming Machine Tools	442.2	– 0.2	+ 1.2
Agricultural Machinery & Equip.	340.0	– 0.1	+ 0.6
Construction Machinery & Equip.	370.7	+ 0.2	+ 2.0
Oil and Gas Field Machinery	410.5	+ 0.1	– 3.5
Industrial Material Handling Equip.	297.7	+ 0.2	+ 0.8
Pumps, Compressors & Allied Equip.	363.9	– 0.2	+ 2.2
Mining Machinery & Equipment	331.3	– 0.1	– 0.1
Mechanical Power Transmission Equip.	349.3	0	+ 3.3
Automobiles	247.7	– 0.7	+ 6.6
Motor Trucks – Light	324.0	– 2.0	+ 3.7
Motor Trucks – Heavy	348.2	+ 0.1	+ 3.8
Railroad Equipment	364.5	0	0
Fabricated Metal Structural Products	316.8	– 0.3	+ 0.6
Electric Motors	352.6	– 0.1	+ 0.4
Valves & Fittings (Dec. 1982 = 100)	107.4	+ 0.1	+ 1.5
Ball & Roller Bearings	355.7	– 0.2	+ 0.7
Foundry & Forge Shop Products	363.3	+ 0.5	– 0.1
Heating Equipment	271.7	+ 0.1	+ [illegible]7
Plumbing Fixtures & Brass Fittings	322.2	– 0.2	+ 2.4
Metal Containers	362.5	0	+ 0.4
Internal Combustion Engines	353.8	0	+ 1.9

Data based on U.S. Labor Dept.'s Producer Price Index